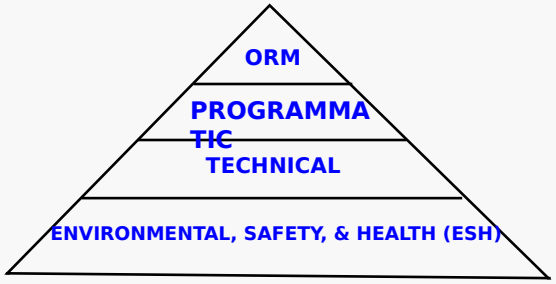
RISK MANAGEMENT IERARCHY



Operational Risk Management (ORM)
- OPNAVINST 3500.39 MCO 3500.27
- Risk of completing an operational mission
- Includes availability of resources (e.g., system), etc.

Programmatic Risk Management
- DOD Regulation 5000.2R, Section 3.3.3
- Risks associated with the system/program
- Includes Cost, Schedule, & Performance

Technical Risk Management
- NAVSO P-3686
- Risks associated with system's technical issues
- Drives all programmatic risks

ESH Risk Management
- DOD Regulation 5000.2R, Sections 3.3.7 & 4.3.7
- Risks include all E, S & H hazards of the system

ESH RISK MANAGEMENT "Players"

PM -Overall responsibility for managing ESH risks

PM's ESH Manager -Technical lead for managing ESH risks

ESHWG -Assigns ESH hazard levels & tracks residual ESH hazards

IPTs -Integrates ESH risk issues into systems engineering process

Contractor -Includes ESH risk issues into overall technical risk

PEO -Accepts "Serious" ESH Hazards (see inside panels)

ASN(RDA) -Accepts "High" ESH Hazards (see inside panels)

User Rep. -Ultimate "recipient" of ESH hazards & their impacts

PM TIPS FOR RISK ANAGEMENT

Understand your responsibilities
- Overall management of ESH risks
- Obtain acceptance for high & serious ESH risks
- Invite Fleet's reps to participate in ESH issues

Leverage ESH risk management techniques
- Assign an ESH Manager - (your technical lead)
- Establish an ESHWG - (your "ESH experts")
- Integrate ESH into overall risk management
- Include ESH risk management in your contract
- Use "standard" concepts (see inner panels)
  - -ESH Hazards Definitions & Categories
  - -ESH Hazards Acceptance Matrix
- Integrate key ESH topics into your ESH Risk Management efforts:
  - -NEPA
  - -Environmental Compliance
  - -System Safety & Health
  - -Hazardous Materials
  - -Pollution Prevention

Influence your PESHE based on ESH Risks
- Describe your strategy to reduce ESH risks
- Address ESH Risk Management responsibilities
- Describe how you will track ESH risks

References:
DOD 5000.2-R
SECNAVINST 5000.2B
OPNAVINST 3500.39 MCO 3500.27
NAVSO P-3686

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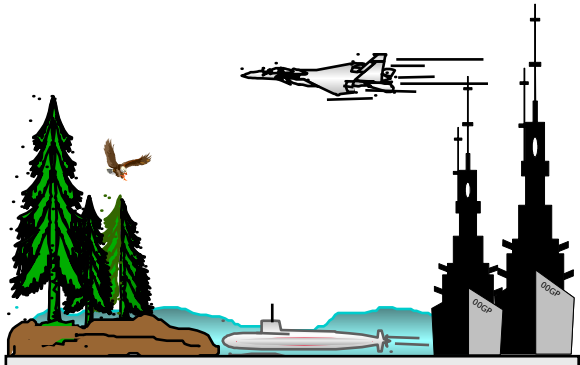
DEPARTMENT OF THE NAVY

ENVIRONMENTAL SAFETY & HEALTH RISK MANAGEMENT



ASN(RD&A)
Acquisition and Business Management

NAVSO P-3686 "Top Eleven Ways to Manage Technical Risk"

HOW ESH RISK MANAGEMENT APPLIES TO EACH

1. Choose an Approach

-Use the severity versus probability approach

2. Assign Accountability

-PM should assign ESH Manager as POC

3. Put Risk Management in the Contract

-Include ESH Risk Management in contracts

4. Mandate Training

-Check with ASN(RDA), SYSCOMs, & CNO N45 for availability of ESH training.

5. Practice Engineering Fundamentals

-Integrate ESH hazards definitions & categories

6. Understand COTS/NDI Applications

-Determine ESH hazards for COTS/NDI products

7. Establish Key Software Measures

-Include Software Safety in ESH Risk Management

8. Assess, Mitigate, Report

-Assess using ESH Hazards Definitions & Categories

-Mitigate highest hazards first

-Report residual high & serious ESH hazards

-Obtain approval using Hazards Acceptance Matrix

9. Use Independent Assessors

-Weapon System Explosive Safety Review Board

-ASN(RDA) ABM

HAZARDS DEFINITIONS & CATEGORIES

Environmental Hazards

Severity	Probability of Occurrence (P)
Definition: Hazards in terms of damage to the environment and violation of law. I Catastrophic Irreversible environmental damage in violation of law. II Critical Reversible environmental damage in violation of law. III Marginal Reversible environmental damage with no violation of law. IV Negligible Insignificant environmental damage.	Definition: The probability of environmental impacts over the life of the system. A Likely Fleet of systems: Continuously, P>1 Individual system: Frequently, $1>P>10^{-1}$ B Probable Fleet of systems: Continuously, $1>P>10^{-1}$ Individual system: Several times, $10^{-1}>P>10^{-3}$ C Occasional Fleet of systems: Several times, $10^{-1}>P>10^{-3}$ Individual system: At some time, $10^{-3}>P>10^{-6}$ D Remote Fleet of systems: At some time, $10^{-3}>P>10^{-6}$ Individual system: Unlikely, $10^{-6}>P$

Safety Hazards

Severity	Probability of Occurrence (P)
Definition: Hazards in terms of system damage/loss or personnel injury/death. I Catastrophic Loss of system Death II Critical Major system damage Permanent or disabling injury/illness III Marginal Minor system damage Temporary or non-disabling injury/illness IV Negligible Minimal or insignificant system damage Minimal or insignificant threat to personnel	Definition: The probability of safety impacts over the life of the system. A Likely Fleet of systems: Continuously, P>1 Individual system: Frequently, $1>P>10^{-1}$ B Probable Fleet of systems: Continuously, $1>P>10^{-1}$ Individual system: Several times, $10^{-1}>P>10^{-3}$ C Occasional Fleet of systems: Several times, $10^{-1}>P>10^{-3}$ Individual system: At some time, $10^{-3}>P>10^{-6}$ D Remote Fleet of systems: At some time, $10^{-3}>P>10^{-6}$ Individual system: Unlikely, $10^{-6}>P$

Health Hazards

Severity	Probability of Occurrence (P)
Definition: Hazards in terms of dosage of a substance, or induced loads*. I Catastrophic Substance dosage or induced loads leading to death II Critical Dosage or loads leading to permanent or disabling injury/illness III Marginal Dosage or loads leading to temporary or non-disabling injury/illness IV Negligible Dosage or loads with minimal or insignificant threat to personnel	Definition: The probability of health impacts over the life of the system. A Likely Fleet of systems: Continuously, P>1 Individual system: Frequently, $1>P>10^{-1}$ B Probable Fleet of systems: Continuously, $1>P>10^{-1}$ Individual system: Several times, $10^{-1}>P>10^{-3}$ C Occasional Fleet of systems: Several times, $10^{-1}>P>10^{-3}$ Individual system: At some time, $10^{-3}>P>10^{-6}$ D Remote Fleet of systems: At some time, $10^{-3}>P>10^{-6}$ Individual system: Unlikely, $10^{-6}>P$

*Dosage (i.e., concentrations vs. times) & induced loads (e.g., temperature, physical, electrical)

RESPONSIBILITIES (from SECNAVINST 5000.2B)

ASN(RD&A)

- Accept high risk hazards.

PEOs/DRPMs/COMSYSCOMs

- Accept serious risk hazards.

Program Managers

- Integrate ESH risk management into the technical risk management process.
- Ensure trade studies include ESH risk management considerations.
- Include ESH risk management in the contract requirements.
- Ensure ESH hazards are accepted at the correct approval authority level.

HAZARDS ACCEPTANCE MATRIX

Severity \ Probability of Occurrence	A	B	C	D
I	High*	High*	Serious**	Serious**
II	High*	High*	Serious**	Low
III	High*	Serious**	Low	Low
IV	Serious**	Serious**	Low	Low

* High hazards must be accepted by ASN(RDA)

**Serious hazards must be accepted at the PEO level.